

CLAIM AMENDMENTS:

The following listing of claims will replace all prior versions and listings of claims in the application.

Listing Of Claims

Claim 1 (currently amended): A collective substrate made of ~~[[a]]~~ ceramic, ~~and the collective substrate being~~ formed integrally of a plurality of insulative members ~~that are~~ arranged in spaced relation in the same plane of the substrate and each ~~having~~ has opposite surfaces which respectively serve as a main surface for mounting a semiconductor element and an external connection surface for ~~connection~~ connecting to a second-component, comprising:

a through-hole formed at ~~at~~ least one of a predetermined position within respective regions defined as the insulative members, ~~and~~;

a position across a boundary between ~~the~~ each region and a region outside the region, as extending thicknesswise of the insulative member, wherein

the through-hole has a single minimum size hole portion located at a ~~the~~ position thicknesswise of the insulative member, and an interior surface tapered such that an opening size progressively decreases from openings of the through-hole in the main surface and in the external connection surface toward the minimum size hole portion-;

a semiconductor element mounting electrode layer provided on the main surface of each of the regions defined as the insulative members;

a second-component connection electrode layer provided on the external connection surface of each of the regions defined as the insulative members; and
an electrically conductive layer provided in the through-hole for connecting the semiconductor element mounting electrode layer and the corresponding second-component connection electrode layer.

Claim 2 (currently amended): A collective substrate set forth in claim 1, wherein the collective substrate has ~~having~~ a heat conductivity of not less than 10W/mK.

Claim 3 (currently amended): A collective substrate as set forth in claim 1, wherein the collective substrate has ~~having~~ a thermal expansion coefficient of not more than $10 \times 10^{-6}/^{\circ}\text{C}$.

Claim 4 (currently amended): A collective substrate as set forth in claim 1, wherein the collective substrate is produced by firing a planar precursor sheet as a material ~~for the collective substrate~~ and then forming through-holes in ~~the~~ resulting substrate.

Claim 5 (cancelled)

Claim 6 (currently amended): A semiconductor element mount produced by cutting a collective substrate as recited in claim 5 into individual regions defined as the insulative members.

Claim 7 (currently amended): A semiconductor element mount as set forth in claim 6, wherein at least an outermost surface portion of the second-component connection electrode layer on the external connection surface is composed of Au.

Claim 8 (currently amended): A semiconductor element mount as set forth in claim 6, wherein a semiconductor element mount region is defined on the main surface of the insulative member, and a frame surrounding the semiconductor element mount region is laminated on the main surface comprising:

~~an insulative member having a semiconductor element mount region defined on a main surface thereof; and~~

~~a frame provided on the main surface of the insulative member as surrounding the semiconductor element mount region.~~

Claim 9 (original): A semiconductor element mount as set forth in claim 8, wherein

the insulative member and the frame each have a thermal expansion coefficient of not more than $10^{-6}/^{\circ}\text{C}$, and

a difference in thermal expansion coefficient between the frame and the insulative member is not more than $3 \times 10^{-6}/^{\circ}\text{C}$.

Claim 10 (currently amended): A semiconductor element mount as set forth in claim 8, wherein not less than 80% of ~~the~~an area of the semiconductor element mount region surrounded by the frame on the main surface of the insulative member is covered with a metal layer at least including the semiconductor element mounting electrode layer.

Claim 11 (currently amended): An imaging device comprising:

a semiconductor element mount as recited in claim 8;

an imaging element ~~as a semiconductor element~~ mounted in ~~the~~a region surrounded by the frame on the main surface of the insulative member of the semiconductor element mount; and

a cover of a transparent plate bonded to an upper surface of the frame for sealing an inside of the frame.

Claim 12 (currently amended): A semiconductor device comprising:

a semiconductor element mount as recited in claim 6; and

a semiconductor element mounted on the main surface of the insulative member of the semiconductor element mount and being sealed with a sealant.

Claim 13 (currently amended): A semiconductor device produced by

mounting semiconductor elements in the regions defined as the insulative members on the main surface of the collective substrate recited in claim 5, ~~with the through-holes of the collective substrate being closed thicknesswise of the collective substrate~~ by filling the minimum size hole portions of the through-holes with an electrically conductive material ~~for the electrically conductive layers, then~~

sealing the entire main surface of the collective substrate mounted with the semiconductor elements with a sealant, and

cutting the collective substrate ~~together with~~ sealed by the sealant into the individual regions, wherein

an insulative member cut out of the collective substrate has a through-hole at least partly ~~exposed to~~ exposes a side face of the insulative member which ~~intersects~~ between a main surface and an external connection surface of the insulative member.

Claim 14 (previously presented): A light emitting diode component comprising:

a semiconductor device as recited in claim 12, wherein

the semiconductor element is a light emitting element, and

the sealant is at least one of a fluorescent material and a protective resin.

Claim 15 (original): A light emitting diode component as set forth in claim 14, wherein at least an outermost surface portion of the electrode layer on the main surface of the insulative member is composed of Ag, Al or an Al alloy.

Claim 16 (original): A light emitting diode comprising:

- a package having a recess;

- a light emitting diode component as recited in claim 14 being mounted on a bottom surface of the recess of the package; and

- a sealing cap or a lens composed of a material pervious to light emitted from the light emitting diode component and fitted in an opening of the recess for sealing the recess.

Claim 17 (previously presented): A light emitting diode component comprising:

- a semiconductor device as recited in claim 13, wherein

- the semiconductor element is a light emitting element, and

- the sealant is at least one of a fluorescent material and a protective resin.

Claim 18 (previously presented): A light emitting diode component as set forth in claim 17, wherein at least an outermost surface portion of the electrode layer on the main surface of the insulative member is composed of Ag, Al or an Al alloy.

Claim 19 (previously presented): A light emitting diode comprising:

- a package having a recess;

- a light emitting diode component as recited in claim 17 being mounted on a bottom surface of the recess of the package; and

- a sealing cap or a lens composed of a material pervious to light emitted from the light emitting diode component and fitted in an opening of the recess for sealing the recess.

Claim 20 (New): A collective substrate made of ceramic and formed integrally of a plurality of insulative members separated by a plurality of dicing regions, each insulative member having a main surface for mounting a semiconductor element, and an external connection surface opposite to the main surface for connecting to a second component, each insulative member comprising:

- at least one through-hole formed on a boundary between the insulative member and a neighboring dicing region thereof, each through hole having a first inner surface tapering from the main surface, and a second inner surface tapering from the external connection surface and meeting the first inner surface, thereby forming a minimum size hole portion thereof;

- a first electrode layer formed on the main surface of the insulative member for connecting to the semiconductor element;

- a second electrode layer formed on the external connection surface of the insulative member for connecting to the second component; and

an electrically conductive layer provided in the through-hole for connecting the first and second electrode layers.